

ABSTRACT OF THE DISCLOSURE

A differential read head comprises one tri-layer reader or a plurality of tri-layer readers operating in a current perpendicular to plane (CPP) mode. The tri-layer readers each comprise a first free layer, a second free layer, and a nonmagnetic layer positioned therebetween. A nonmagnetic spacer ~~means~~ is positioned between the plurality of tri-layer readers for electrically connecting the plurality of tri-layer readers in series such that a single CPP sense current representing a differential signal flows serially through the read head. With a single tri-layer reader, the free layers are spaced by a width substantially similar to the transition width of the magnetic medium.